DISTRIBUTED OPERATOR COOLING SYSTEM

Abstract of the Disclosure

A distributed operator cooling system is provided for a work vehicle. The system includes a primary circuit and a secondary loop. The primary circuit is a conventional A/C circuit having a compressor, a condenser, a receiver/dryer and an expansion valve. The secondary loop includes a coolant pump and a plurality of coolant-air heat exchangers each having a blower fan associated therewith. The secondary loop is coupled to the primary circuit by way of a coolant-refrigerant heat exchanger wherein the coolant of the secondary loop is chilled. Chilled coolant is circulated to the coolant-air heat exchangers by coolant lines and back to the pump and coolant-refrigerant heat exchanger by return lines. The coolant lines are routed through the wall of an operator's enclosure. At least one of the coolant-air heat exchangers is located in the forward area of the operator's enclosure in a front console of the vehicle substantially in front of the operator. A pair of coolant-air heat exchangers are located above and on either side, forward or aft of the operator's head. Additional heat exchangers can be provided at additional locations within the confines of the operator's enclosure for further distributed cooling and/or to compensate for potential hot spots within the cab. The blower fans associated with each coolant-air heat exchanger can be individually controlled to optimize the flow of air through the exchanger according to the needs of the operator. The use of multiple compact coolant-air heat exchangers positioned at multiple locations within the operator's enclosure allows for more efficient cooling than possible with a single large heat exchanger. The use of a secondary loop system allows for locating most of the system components remotely from the operators enclosure thereby reducing the risk of refrigerant contact with the operator and allows refrigerant lines to be shortened so as to improve the efficiency of the refrigerant cycle.